Cholangiography after Cholecystectomy

Visualization with Cholografin by Vein

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• **A new drug, Cholografin, makes visualization of the bile ducts (hepatic, cystic and common) clinically available.**

CHOLOGRAFIN® is a new intravenous contrast medium for the visualization of the biliary tract. It is the disodium salt of N,N'-adipyl-bis (3-amino-2,4,6-triodo)-benzoic acid. It is marketed as a 20 per cent isotonic solution. The iodine content, 64.32 per cent, is firmly bound in the molecule. Actively excreted by liver cells, Cholografin outlines the common duct ten to sixty minutes after injection. The shadow of the common bile duct then fades. If the gallbladder is present, it is seen with maximum intensity in three to four hours. Normally, 10 per cent of the Cholografin is excreted in the urine, and this proportion is increased if there is interference with excretion through the liver.

Cholecystographic examination with oral administration of a contrast medium should be considered a routine method for visualization of the gallbladder. Cholografin by vein provides a way to success where the oral method has failed, and it should be the method tried first in patients who do not have a gallbladder or in the presence of jaundice; also where vomiting or infancy makes the oral route difficult or impossible.

The common duct was visualized in 46 of 58 patients who were examined by this method after cholecystectomy. The failures occurred in patients with liver damage or extrahepatic obstruction severe enough to cause jaundice.

The examination was performed with the patient fasting. Giving 10.0 mg. of morphine sulfate subcutaneously 15 minutes before the injection of Cholografin improved the visualization of the common duct by causing spasm of the sphincter of Oddi. Forty cubic centimeters of Cholografin was given intravenously over a period of five to ten minutes.

About 10 per cent of the patients vomited or felt nauseated. These reactions were not serious in any case. They were most pronounced in ambulatory patients and in some cases may have been due to the morphine. Therefore, 50 mg. of Dramamine® now is given intramuscularly to ambulatory patients 15 minutes before the injection of morphine sulfate, and none so prepared has had the reactions mentioned. In cases in which pancreatitis appears to be a likelihood, morphine is not given lest reflux into the pancreatic duct exacerbate it.

A series of ten "normal" asymptomatic postcholecystectomy patients were examined. None had a common duct greater than ten millimeters in diameter. Several were reexamined without morphine premedication and the decrease in measurement was only one to two millimeters. Therefore, the authors feel that any common bile duct measuring more than ten millimeters in maximum diameter is dilated. This agrees with a report by Twiss.[3] Routine oblique and postero-anterior views are taken at every stage so that overlying densities will not simulate stones. The several changes of position help to mix the bile in the gallbladder (if it has not been removed). With a patient lying quiet, the peripheral layer of iodized bile can concentrate in the gallbladder, leaving the nonopaque center to simulate a stone.

No real contraindication to this examination has been noted. Pronounced biliary obstruction and severe liver damage usually will result in nonvisualization. However, the authors have used the method in patients with those conditions and have occasionally been astonished by the information obtained. No harmful effects were observed.

Following are a few reports of cases to illustrate the usefulness of intravenous cholangiography and cholecystography.

CASE 1. A woman 44 years of age had had severe abdominal pain for three months, and had been vomiting for three weeks. Cholecystitis being suspected, examination with Cholografin given intravenously was carried out and it showed good biliary tract (Figure 1). If attempt had been made to give the drug by mouth, the patient would have vomited it.

CASE 2 (Figure 2). The subject, symptom-free, was a woman 45 years of age, one of ten patients who had had cholecystectomy—in this case two years before because of stones. The common duct

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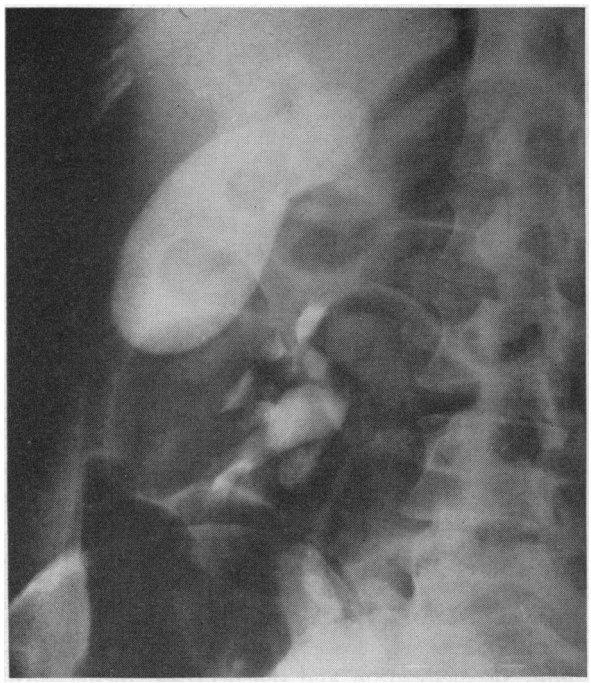

Figure 1.—The patient had intractable vomiting (probably functional). Intravenous Cholografin visualizes normal biliary tract. The film, made four hours after injection, shows (incidentally) the kidney pelvis.

(Figure 2) was 9 mm. in diameter. (10 mm. is considered the upper normal limit, even after morphine premedication.)

CASE 3 (Figure 3). Several months before examination with Cholografin, the patient, a woman of 76 years, had had cholecystectomy for stones. Cholangiography with the medium introduced by T tube at that time showed free passage through into the duodenum. When the patient again became ill and the liver was enlarged and tender, examination with Cholografin showed the common duct 16 mm. in diameter and also pronounced distention of the hepatic duct and its branches. The presumptive diagnosis was biliary dyskinesia, with functional impediment at the sphincter of Oddi (a condition that is ill-understood).

CASE 4 (Figure 4). A 63-year-old man entered the hospital with an illness that appeared to be acute pancreatitis. He had had several similar attacks since cholecystectomy two years before. Stones had not been found. The serum amylase was very high. Upon examination with Cholografin the common duct was observed to be 15 mm. in diameter with a defect or intrusion at the lower end interpreted as caused by the presence of a stone. At operation several stones were removed. The patient was discharged improved.

CASE 5 (Figure 5). A woman 60 years of age had had occasional attacks of epigastric pain since cholecystectomy 15 years previously. Examination with Cholografin showed a long stump of cystic

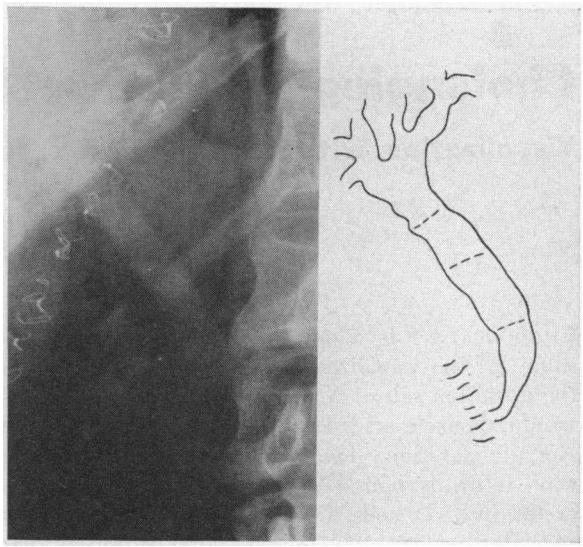

Figure 2.—The patient, asymptomatic, had had cholecystectomy two years previously. This film was made 30 minutes after intravenous injection of Cholografin. The common duct was 9 mm. in diameter.

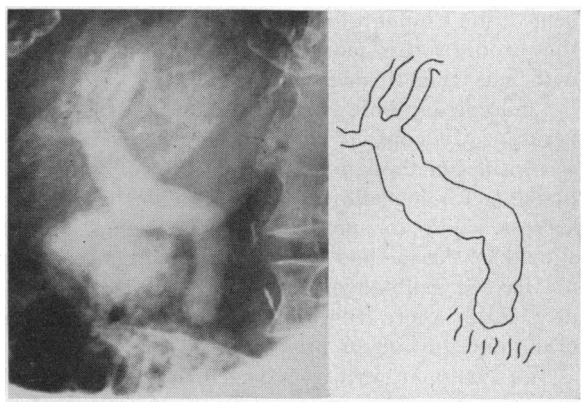

Figure 3.—Film of a postcholecystectomy patient, made 45 minutes after intravenous infusion of Cholografin, shows common duct dilated to 16 mm., attributed to dyskinesia of sphincter of Oddi.

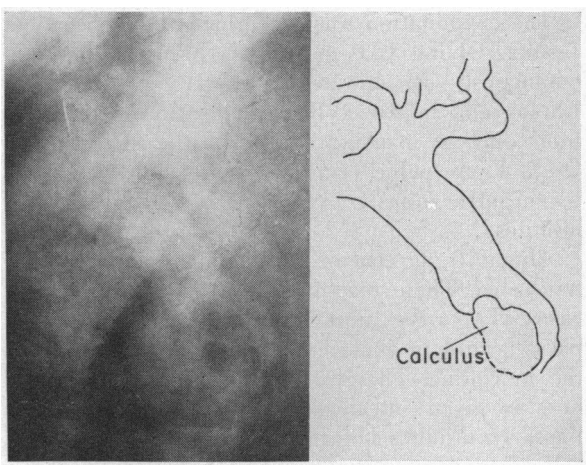

Figure 4.—Two years after cholecystectomy. The film, 60 minutes after intravenous injection of Cholografin, shows common duct 15 mm. in diameter with stones blocking the lower end.

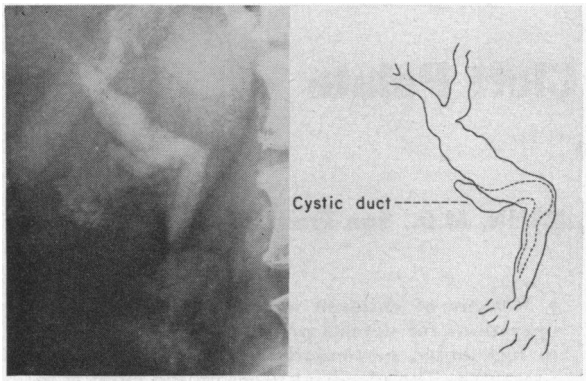

Figure 5.—Fifteen years postcholecystectomy. A film 45 minutes after intravenous injection of Cholografin shows a persistent stump of cystic duct, with free flow of bile into the duodenum and without dilation of the common duct.

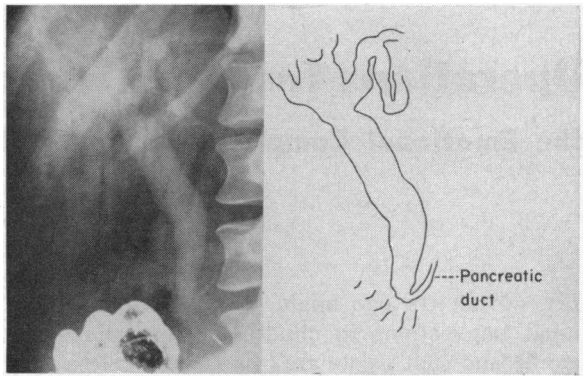

Figure 6.—Fifteen years postcholecystectomy. A film 30 minutes after intravenous injection of Cholografin shows the common duct 15 mm. in diameter and reflux 2 cm. up the pancreatic duct.

duct running posterior to the common duct, but no stones. Some investigators have suggested that such a stump can cause symptoms.

CASE 6 (Figure 6). The patient, a 35-year-old man, had had cholecystectomy 15 years before for stones. Intolerance for fatty foods persisted, with occasional epigastric pain. Four times in the preceding year he had entered the hospital because of diarrhea and vomiting. Serum amylase had never been found elevated. Examination with Cholografin showed the common duct dilated to 15 mm. with reflux into the pancreatic duct which was not dilated. Conservative management sufficed and operation was not needed, but it is supposed that reflux of bile into the pancreas could have accounted for the symptoms.

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